
बन्द सिरे वाले बडे ड्रम — विशिष्टि

भाग 1 ग्रेड-ए ड्रम
(चौथा पुनरीक्षण)

Drums Large, Fixed Ends — Specification

Part 1 Grade A Drums
(*Fourth Revision*)

ICS 55.140; 77.140.01

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FOREWORD

This Indian Standard (Part 1) (Fourth Revision) was adopted by the Bureau of Indian Standards, after the draft finalized by the Metal Containers Sectional Committee had been approved by the Metallurgical Engineering Division Council.

This standard was first published in 1961 and subsequently revised in 1974, 1983 and 1993. In this revision the following modifications have been made:

- a) In scope Type 1 drums gas welding has been introduced.
- b) Reference clause has been modified.
- c) Material clause has been modified.
- d) Clause **7.3** has been modified by introducing gas welding.
- e) Clause **7.4** has been modified by changing 5 layers to 6 layers of sheets.
- f) Clause **7.5** has been modified.
- g) Clause **9.2.3** has been modified.

Assistance has been derived from ISO 15750 (Part 1) : 2002 'Packaging — Steel drums: Part 1 Removable lead (open) drums with a minimum total capacity 208 litre' and ISO 15750 (Part 2) : 2002 'Packaging — Steel drums: Part 2 Non removable lead (tight lead) drums with a minimum total capacity 212 litre, 210 litre and 230 litre, issued by International organization for standardization.

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS 2 : 1960 'Rules for rounding off numerical values (*revised*)'. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

Indian Standard

DRUMS, LARGE, FIXED ENDS — SPECIFICATION

PART 1 GRADE A DRUMS

(*Fourth Revision*)

1 SCOPE

This standard (Part 1) covers the requirements for Grade A steel drums of 200 litre nominal capacity with fixed ends with the following type of construction:

- a) *Type 1* — Drums of steel sheets of nominal thickness 1.25 mm for body and ends with end seam resistance welded and double seam construction.
- b) *Type 2* — Drums of sheets of nominal thickness 1.25 mm for body and ends, with end seam of triple/spiral seam construction.

2 REFERENCES

The following standards contains provisions which through reference in this text, constitute provision of this standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this standard are encouraged to investigate the possibility of applying the most recent edition of the standard indicated below:

<i>IS No.</i>	<i>Title</i>
513 : 2008	Cold reduced low carbon steel sheets and strips (<i>fifth revision</i>)
1394 : 1984	Glossary of terms relating to metal containers (<i>third revision</i>)
1784 : 1998	Screwed closures for drums (<i>third revision</i>)
3259 : 1966	Methods of sampling of metal containers

3 TERMINOLOGY

For the purpose of this standard, the definitions given in IS 1394 shall apply.

4 CAPACITY

The minimum gross capacity of the drums measured with water at ambient temperature shall be 210 litre.

5 DIMENSIONS

The drums of Type 1 and Type 2 construction shall have dimensions as given in Fig. 1 and Fig. 2 respectively.

6 MATERIALS FOR TYPE 1 AND TYPE 2 DRUMS

- a) The body and ends of the drums shall be made

from cold reduced carbon steel sheets conforming to Grade CR1, CR2 or CR3 of IS 513.

- b) The nominal thickness of steel sheets for body and ends of both types of drums shall be 1.25 mm.
- c) The sheets and blanks may be phosphatized by any of the recognized processes, if required by the purchaser.

7 CONSTRUCTION

7.1 The sheets shall be blanked and formed to shape. The blanks shall be free from cracks, dents, pittings, rust and other defects.

7.2 The body shall be continuously resistance welded so as to provide air-tight joint.

7.3 Double Seam Construction for Type 1 Drums

The top and bottom ends shall be fixed to the body by resistance welding /MIG welding and double seaming as shown in Fig. 1

7.4 Triple/Spiral Seam Construction for Type 2 Drums

The top and bottom ends shall be seamed to the body as shown in Fig. 2. The seam shall have rolled 6 or more layers of sheets with the sealing compound forming a core at the joint of body and end sheets. The sealing compound forming the core shall be flexible and chemically resistant to the product to be packed.

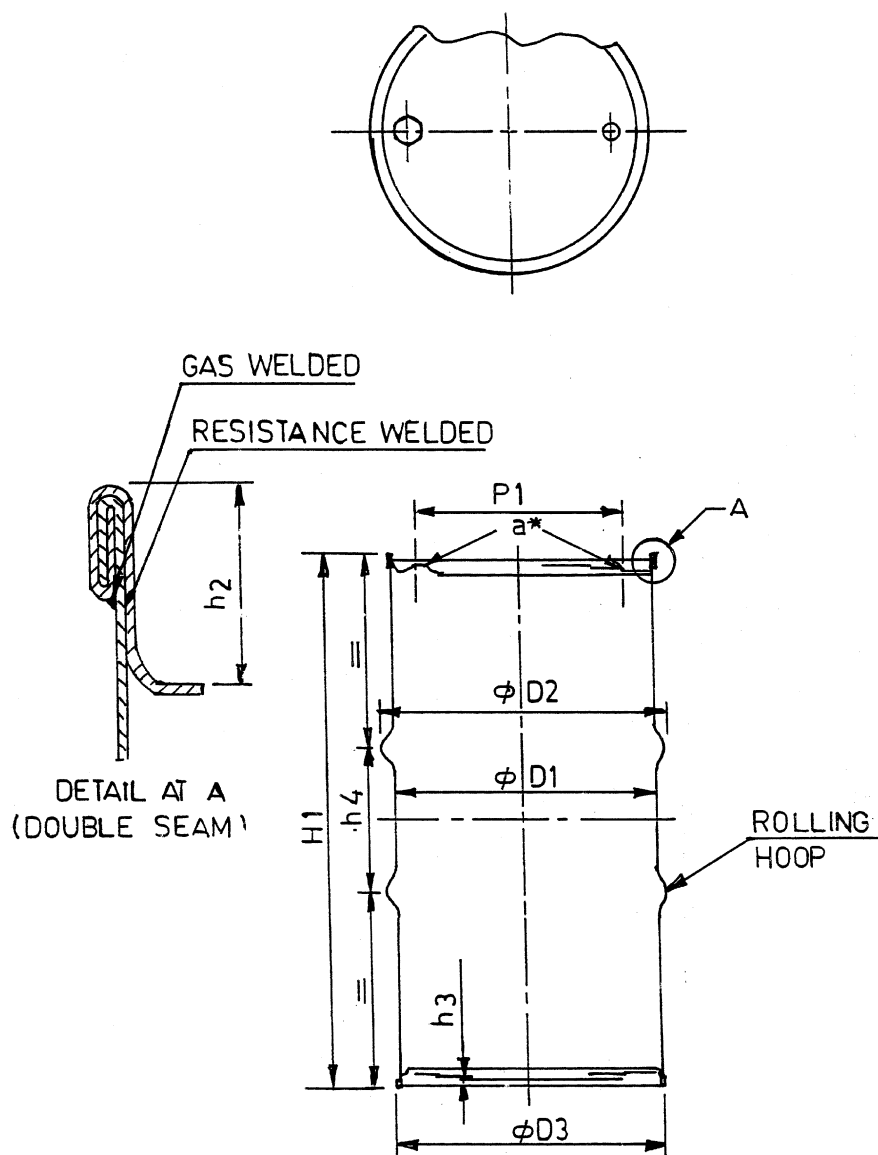
7.5 The drum shall be provided with 2 rolling beads or hoops, expanded or rolled. In the drum body, located as shown in Fig. 1 and Fig. 2. Constructions of rolling hoops other than those shown are allowed.

7.6 Closures

The drum shall be fitted either with one screwed closure of 50 mm or with two screwed closures – one of 50 mm and the other of 20 mm as desired by the purchaser. The position of the screwed closures shall be as shown in Fig. 1 and Fig. 2. Screwed closures shall be conforming to IS 1784.

8 FINISH

8.1 The drum shall be in clean condition, the inside being free from all traces of rust and foreign matter.



a* The complete closure (plug and capseals/overseas) shall not protrude above the top of seam.

NOTE — Figure 1 shows three possibilities for the shape of the top convex flat and concave

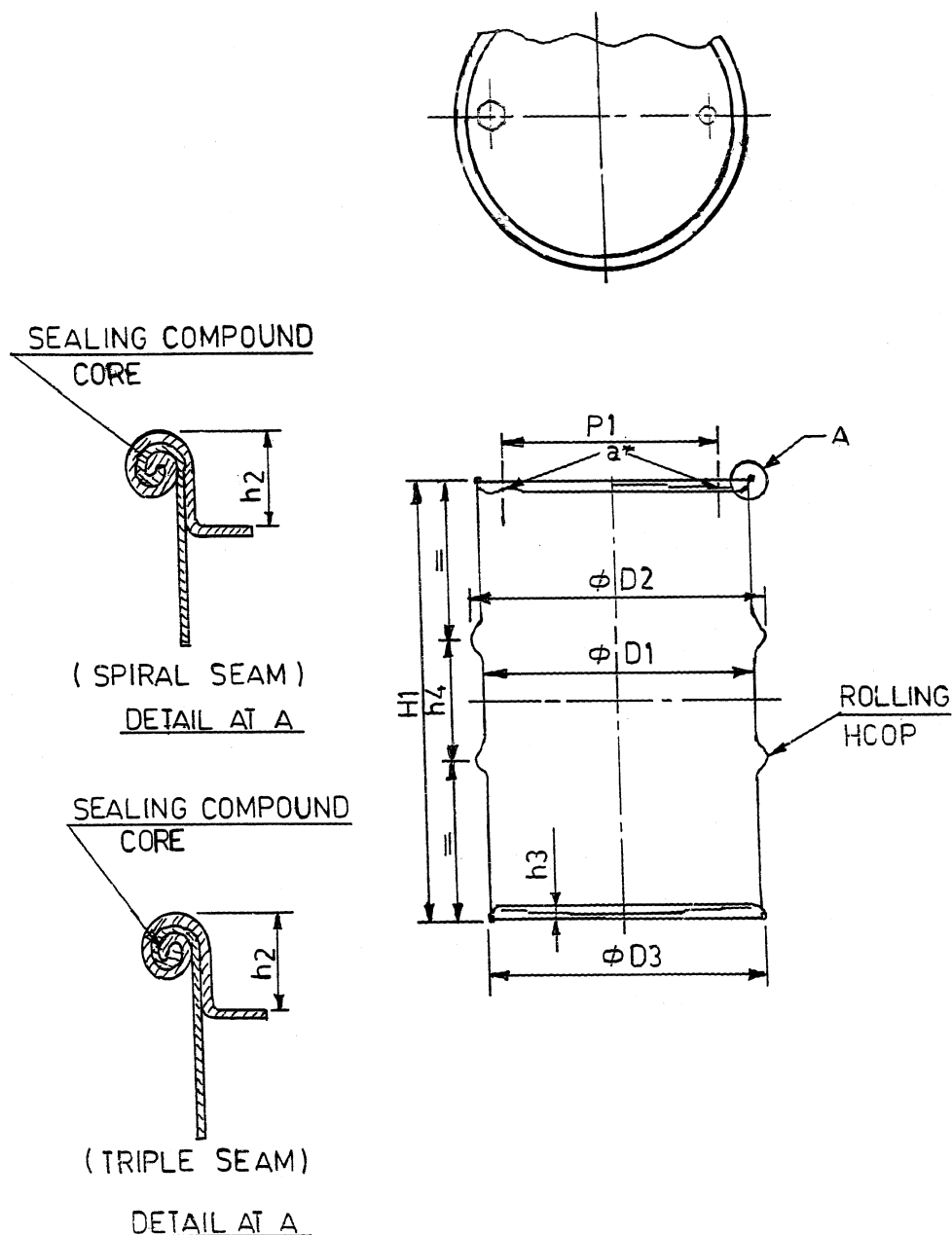
All dimensions in millimetres.

Dimension	Description	Type 1 C	Type 1 D
D1	Internal diameter	571.5 ± 2	571.5 ± 2
D2	External diameter	585 Max	596 Max
D3	Diameter over chime	585 Max	585 Max
H1	Total drum height	878 ± 5	878 ± 5
h2	Depth of top	a ¹⁾	a ¹⁾
h3	Clearance from floor	4 Min	4 Min
h4	Distance between beads	280 ± 3	280 ± 3
p1	Centre-to-centre distance closures	451 ± 1	451 ± 1

¹⁾ The depth of the top shall be such that the closures do not protrude above the chime.

NOTE — For drums produced with concave top, the total drum height may be increased by 4 mm in order to reach the specified volume.

FIG. 1 DRUM WITH RESISTANCE/GAS WELDED GRADE A



a* The complete closure (plug and capseals, overseas) shall not protrude above the top of seam.

NOTE — Figures 2 shows three possibilities for the shape of the top convex, flat and concave
All dimensions in millimetres.

Dimension	Description	Type 2 C	Type 2 D
D1	Internal diameter	571.5 ± 2	571.5 ± 2
D2	External diameter	585 Max	596 Max
D3	Diameter over chime	585 Max	585 Max
H1	Total drum height	878 ± 5	878 ± 5
h2	Depth of top	A ¹⁾	a ¹⁾
h3	Clearance from floor	4 Min	4 Min
h4	Distance between beads	280 ± 3	280 ± 3
p1	Centre-to-centre distance closures	451 ± 1	451 ± 1

¹⁾ The depth of the top shall be such that the closures do not protrude above the chime.

NOTE — For drums produced with concave top, the total drum height H1 may be increased by 4mm in order to reach the specified volume.

FIG. 2 DRUM WITH TRIPLE/SPIRAL SEAM GRADE A

8.2 The outside surface of each drum shall be treated as agreed to between the purchaser and the supplier.

8.3 If the materials used for the body, heads and fittings are not in themselves compatible with contents to be transported, suitable internal protective coatings or treatments shall be applied as agreed to between the customer and the supplier. These coatings or treatments shall retain their protective properties under normal conditions of transport

9 TESTS

9.1 The leakage test shall be performed by using any of the following methods:

- a) Each drum shall be tested for leakage at air pressure of 50 kPa (0.5 kgf/cm) with the seams under water or covered with soap solution. The drum shall not show any sign of leakage or drop in the test pressure when observed for at least 10 s.
- b) Using special equipment fill the drum with helium, thereafter putting the drum in an air-tight chamber, creating a high vacuum in the annular space between the inner wall of the chamber and outer surface of the drum and thereafter testing for leakage in the drum body by checking for presence of helium in the annular space using mass spectrometer.
- c) Using special equipment put the drum in an air-tight chamber, creating a high vacuum in the annular space between the inner wall of the chamber and outer surface of the drum and thereafter testing for leakage in the drum body by observing for any drop of the differential pressure between inside of the drum and outside of the drum.

9.1.1 If there is a minor leakage found during leakage test it may be manually welded and the drum shall be retested for leakage test. If the leakage is found again, the drum shall be rejected.

9.2 Drop Test

9.2.1 Fill the drum to 98 percent of the gross capacity with water at ambient temperature and close it properly. Suspend the drum with the diagonal in the vertical position and raise it to a height so that the lowest point on the drum is 1.80 m clear off the horizontal striking test surface. The striking surface shall be horizontally plain concrete floor or steel plate at least 40 mm thick. The drum shall be at the bottom rim, at its junction with the side seam. The same drum shall again be dropped so that it strikes the floor at the top rim at its

junction with the side seam. Also additional drop test on a separate drum or any other parts which may be considered weaker than the chime may be carried out, if required by the purchaser.

9.2.2 The drum shall be examined for any leakage of water after the test. Any leakage of water shall indicate failure of the drum in the test.

9.2.3 The drum after the test shall be subjected to air leakage test as per **9.1**. The drum shall not show any sign of leakage (Applicable for Grade A, Type 1 only).

9.3 Hydraulic Pressure Test

The drum shall be subjected to a gradually applied hydraulic pressure of 200 kPa (2.0 kgf/cm²). This pressure shall be maintained for at least 5 min and any leakage of water or drop in the pressure shall indicate failure of the drum in the test.

10 SAMPLING

10.1 Representative samples of the drums for tests regarding dimensions, capacity, construction, finish, air leakage, shall be drawn as prescribed in IS 3259.

10.2 One sample from each lot of 2 000 drums shall be subjected to drop test as detailed in **9.2.1** to **9.2.3**.

10.3 One fresh sample from each lot of 2 000 drums shall be selected and subjected to hydraulic pressure test as detailed in **9.3**.

10.4 If the sample tested above fails two more drums from the same lot, shall be subjected to the same test and if any of the two samples fails again, the lot shall be deemed to have failed in the test.

11 MARKING

Each drum shall be marked legibly and indelibly with the following particulars by embossing with raised markings or screen printing on the bottom :

- a) Indicating the source of the manufacturer,
- b) Grade and type of the drum, and
- c) Any other information as required by the purchaser.

12 BIS CERTIFICATION MARKING

The drum may also be marked with the Standard Mark.

12.1 The use of the Standard Mark is governed by the provisions of the *Bureau of Indian Standards Act, 1986* and the Rules and Regulations made thereunder. The details of conditions under which the license for the use of the Standard Mark may be granted to manufacturers or producers may be obtained from the Bureau of Indian Standards.

Bureau of Indian Standards

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Amendments are issued to standards as the need arises on the basis of comments. Standards are also reviewed periodically; a standard along with amendments is reaffirmed when such review indicates that no changes are needed; if the review indicates that changes are needed, it is taken up for revision. Users of Indian Standards should ascertain that they are in possession of the latest amendments or edition by referring to the latest issue of 'BIS Catalogue' and 'Standards : Monthly Additions'.

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Amendments Issued Since Publication

Amend No.	Date of Issue	Text Affected

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